

What is claimed is:

1. A method for communicating hydraulic fluid through a tubing retrievable safety valve having a non annular hydraulic chamber in a sidewall portion thereof, the method comprising the steps of:

locating a communication tool within the tubing retrievable safety valve; and

creating a fluid passageway between the non annular hydraulic chamber and the interior of the tubing retrievable safety valve with the communication tool by penetrating through the sidewall portion and into the non annular hydraulic chamber.

2. The method as recited in claim 1 wherein the step of locating a communication tool within the tubing retrievable safety valve further comprises engaging locating keys of the communication tool into a profile.

3. The method as recited in claim 1 further comprising the step of axially aligning a cutting device of the communication tool with the non annular hydraulic chamber.

4. The method as recited in claim 3 wherein the step of axially aligning a cutting device of the communication tool with the non annular hydraulic chamber further comprises axially shifting a first section of the communication tool relative to a second section of the communication tool.

5. The method as recited in claim 4 wherein the step of axially shifting a first section of the communication tool relative to a second section of the communication tool further comprises shearing a shear pin initially coupling the first section of the communication tool with the second section of the communication tool.

6. The method as recited in claim 1 further comprising the step of circumferentially aligning a locating key of the communication tool with a pocket of the tubing retrievable safety valve to prevent relative rotation therebetween.

7. The method as recited in claim 6 wherein the step of circumferentially aligning a locating key of the communication tool with a pocket of the tubing retrievable safety valve further comprises radially outwardly shifting the locating key with a collet spring attached to the communication tool.

8. The method as recited in claim 1 wherein the step of creating a fluid passageway between the non annular hydraulic chamber and the interior of the tubing retrievable safety valve with the communication tool by penetrating through the sidewall portion and into the non annular hydraulic chamber further comprises creating the fluid passageway with a mechanical cutting device.

9. The method as recited in claim 8 wherein the step of creating the fluid passageway with a mechanical cutting device further comprises creating the fluid passageway with a punch.

10. A method for communicating hydraulic fluid through a tubing retrievable safety valve having a non annular hydraulic chamber in a sidewall portion thereof to a wireline retrievable safety valve, the method comprising the steps of:

locating a communication tool within the tubing retrievable safety valve;

creating a fluid passageway between the non annular hydraulic chamber and the interior of the tubing retrievable safety valve with the communication tool by penetrating through the sidewall portion and into the non annular hydraulic chamber;

removing communication tool from the tubing retrievable safety valve; and

positioning the wireline retrievable safety valve within the tubing retrievable safety valve such that hydraulic fluid is communicatable thereto through the fluid passageway.

11. The method as recited in claim 10 wherein the step of locating a communication tool within the tubing retrievable safety valve further comprises engaging locating keys of the communication tool into a profile.

12. The method as recited in claim 10 further comprising the step of axially aligning a cutting device of the communication tool with the non annular hydraulic chamber.

13. The method as recited in claim 12 wherein the step of axially aligning a cutting device of the communication tool with the non annular hydraulic chamber further comprises axially shifting a first section of the communication tool relative to a second section of the communication tool.

14. The method as recited in claim 13 wherein the step of axially shifting a first section of the communication tool relative to a second section of the communication tool further comprises shearing a shear pin initially coupling the first section of the communication tool with the second section of the communication tool.

15. The method as recited in claim 10 further comprising the step of circumferentially aligning a locating key of the communication tool with a pocket of the tubing retrievable safety valve to prevent relative rotation therebetween.

16. The method as recited in claim 15 wherein the step of circumferentially aligning a locating key of the communication tool with a pocket of the tubing retrievable safety valve further comprises radially outwardly shifting the locating key with a collet spring attached to the communication tool.

17. The method as recited in claim 10 wherein the step of creating a fluid passageway between the non annular hydraulic chamber and the interior of the tubing retrievable safety valve with the communication tool by penetrating through the sidewall portion and into the non annular hydraulic chamber further comprises creating the fluid passageway with a mechanical cutting device.

18. The method as recited in claim 17 wherein the step of creating the fluid passageway with a mechanical cutting device further comprises creating the fluid passageway with a punch.

19. A method for communicating hydraulic fluid through a tubing retrievable downhole device having a non annular hydraulic chamber in a sidewall portion thereof to a wireline retrievable downhole device, the method comprising the steps of:

locating a communication tool within the tubing retrievable downhole device;

creating a fluid passageway between the non annular hydraulic chamber and the interior of the tubing retrievable downhole device with the communication tool by penetrating through the sidewall portion and into the non annular hydraulic chamber;

removing communication tool from the tubing retrievable downhole device; and

positioning the wireline retrievable downhole device within the tubing retrievable downhole device such that hydraulic fluid is communicatable thereto through the fluid passageway.

20. The method as recited in claim 19 wherein the step of locating a communication tool within the tubing retrievable downhole device further comprises engaging locating keys of the communication tool into a profile.

21. The method as recited in claim 19 further comprising the step of axially aligning a cutting device of the communication tool with the non annular hydraulic chamber.

22. The method as recited in claim 21 wherein the step of axially aligning a cutting device of the communication tool with the non annular hydraulic chamber further comprises axially shifting a first section of the communication tool relative to a second section of the communication tool.

23. The method as recited in claim 22 wherein the step of axially shifting a first section of the communication tool relative to a second section of the communication tool further comprises shearing a shear pin initially coupling the first section of the communication tool with the second section of the communication tool.

24. The method as recited in claim 19 further comprising the step of circumferentially aligning a locating key of the communication tool with a pocket of the tubing retrievable downhole device to prevent relative rotation therebetween.



25. The method as recited in claim 24 wherein the step of circumferentially aligning a locating key of the communication tool with a pocket of the tubing retrievable downhole device further comprises radially outwardly shifting the locating key with a collet spring attached to the communication tool.

26. The method as recited in claim 19 wherein the step of creating a fluid passageway between the non annular hydraulic chamber and the interior of the tubing retrievable downhole device with the communication tool by penetrating through the sidewall portion and into the non annular hydraulic chamber further comprises creating the fluid passageway with a mechanical cutting device.

27. The method as recited in claim 26 wherein the step of creating the fluid passageway with a mechanical cutting device further comprises creating the fluid passageway with a punch.

28. A safety valve for downhole use in a well comprising:

a housing having a longitudinal bore extending therethrough and having a non annular hydraulic chamber in a sidewall portion thereof;

a valve closure member mounted in the housing to control fluid flow through the longitudinal bore, the valve closure member having closed and opened positions;

a flow tube in the housing to shift the valve closure member between the closed and opened positions;

a rod piston slidably disposed in the non annular hydraulic chamber of the housing, the rod piston operably coupled to the flow tube; and

a pocket in the longitudinal bore for engaging a locating key of a communication tool whereby the interaction between the locating key and the pocket prevents relative rotation between the communication tool and the safety valve.

29. The safety valve as recited in claim 28 further comprising a profile for receiving a set of axial locating key of the communication tool.

30. The safety valve as recited in claim 28 wherein the sidewall portion has a radially reduced region.

31. A system for communicating hydraulic fluid to a wireline retrievable safety valve comprising:

a tubing retrievable safety valve having a non annular hydraulic chamber in a sidewall portion thereof; and

a communication tool selectively locatable within the tubing retrievable safety valve, the communication tool creating a fluid passageway between the non annular hydraulic chamber and the interior of the tubing retrievable safety valve by penetrating through the sidewall portion and into the non annular hydraulic chamber such that when the wireline retrievable safety valve is positioned within the tubing retrievable safety valve, hydraulic fluid is communicatable thereto through the fluid passageway.

32. The system as recited in claim 31 wherein the communication tool further comprises a radial cutting tool.

33. The system as recited in claim 31 wherein the communication tool further comprises a mechanical cutting tool.

34. The system as recited in claim 31 wherein the communication tool further comprises a punch.

35. The system as recited in claim 31 wherein the tubing retrievable safety valve further comprises a pocket that engageably receives a locating key of the communication tool whereby the interaction between the locating key and the pocket prevents relative rotation between the communication tool and the tubing retrievable safety valve.

36. A system for communicating hydraulic fluid to a wireline retrievable downhole device comprising:

a tubing retrievable downhole device having a non annular hydraulic chamber in a sidewall portion thereof; and

a communication tool selectively locatable within the tubing retrievable downhole device, the communication tool creating a fluid passageway between the non annular hydraulic chamber and the interior of the tubing retrievable downhole device by penetrating through the sidewall portion and into the non annular hydraulic chamber such that when the wireline retrievable downhole device is positioned within the tubing retrievable downhole device, hydraulic fluid is communicatable thereto through the fluid passageway.

37. The system as recited in claim 36 wherein the communication tool further comprises a radial cutting tool.

38. The system as recited in claim 36 wherein the communication tool further comprises a mechanical cutting tool.

39. The system as recited in claim 36 wherein the communication tool further comprises a punch.

40. The system as recited in claim 36 wherein the tubing retrievable downhole device further comprises a pocket that engageably receives a locating key of the communication tool whereby the interaction between the locating key and the pocket prevents relative rotation between the communication tool and the tubing retrievable downhole device.

41. The system as recited in claim 36 wherein the tubing retrievable downhole device further comprises tubing retrievable safety valve.

42. The system as recited in claim 36 wherein the wireline retrievable downhole device further comprises wireline retrievable safety valve.

43. A method for communicating hydraulic fluid through a tubing retrievable safety valve having a non annular hydraulic chamber in a sidewall portion thereof, the method comprising:

    locating a communication tool having a cutting device within the tubing retrievable safety valve;

    axially aligning the cutting device with the non annular hydraulic chamber;

    rotating the cutting device relative to the non annular hydraulic chamber; and

    creating a fluid passageway between the non annular hydraulic chamber and the interior of the tubing retrievable safety valve with the cutting device.

44. The method of claim 43 wherein axially aligning the cutting device includes shifting a first section of the communication tool relative to a second section of the communication tool.



45. The method of claim 44 wherein shifting the first section of the communication tool relative to the second section of the communication tool includes shearing a shear pin coupling the first and second sections of the communication tool to one another.

46. The method of claim 43 wherein rotating the cutting device relative to the non annular hydraulic chamber includes shearing a shear pin coupling a portion of the cutting device to a portion of the communication tool.

47. The method of claim 43 further comprising circumferentially aligning the cutting device with the non-annular hydraulic chamber.

48. The method of claim 37 wherein circumferentially aligning the cutting device includes actuating an anti-rotation mechanism to prevent rotation of at least a portion of the communication tool relative to the non annular hydraulic chamber.

49. The method of claim 48 wherein actuating the anti-rotation mechanism includes aligning a protruding portion of the communication tool with a recessed portion of the tubing retrievable safety valve.

50. The method of claim 49 wherein actuating the anti-rotation mechanism further includes shifting the protruding portion of the communication tool radially outward to engage the recessed portion of the tubing retrievable safety valve.

51. The method of claim 43 wherein creating the fluid passageway includes mechanically cutting the sidewall portion of the tubing retrievable safety valve.

52. A method for communicating hydraulic fluid through a tubing retrievable safety valve having a hydraulic chamber, comprising:

    locating a communication tool having a cutting device within the tubing retrievable safety valve;

    axially aligning the cutting device with the hydraulic chamber;

    rotating the cutting device relative to the hydraulic chamber; and

    creating a fluid passageway between the hydraulic chamber and the interior of the tubing retrievable safety valve with the cutting device.

53. The method of claim 52 wherein axially aligning the cutting device includes shifting a first section of the communication tool relative to a second section of the communication tool.

54. The method of claim 53 wherein shifting the first section of the communication tool relative to the second section of the communication tool includes shearing a shear pin coupling the first and second sections of the communication tool to one another.

55. The method of claim 52 wherein rotating the cutting device relative to the hydraulic chamber includes shearing a shear pin coupling a portion of the cutting device to a portion of the communication tool.

56. The method of claim 52 wherein the hydraulic chamber is a non-annular hydraulic chamber.

57. The method of claim 56 further comprising circumferentially aligning the cutting device with the non-annular hydraulic chamber.

58. The method of claim 57 wherein circumferentially aligning the cutting device includes actuating an anti-rotation mechanism to prevent rotation of at least a portion of the communication tool relative to the non annular hydraulic chamber.

59. The method of claim 58 wherein actuating the anti-rotation mechanism includes aligning a protruding portion of the communication tool with a recessed portion of the tubing retrievable safety valve.

60. The method of claim 59 wherein actuating the anti-rotation mechanism further includes shifting the protruding portion of the communication tool radially outward to engage the recessed portion of the tubing retrievable safety valve.

61. The method of claim 52 wherein creating the fluid passageway includes mechanically cutting a sidewall portion of the tubing retrievable safety valve.

62. A method for communicating hydraulic fluid through a tubing retrievable safety valve having a non annular hydraulic chamber in a sidewall portion thereof, the method comprising:

    locating a communication tool having a cutting device within the tubing retrievable safety valve;

    axially aligning the cutting device with the non annular hydraulic chamber;

    actuating an anti-rotation mechanism to prevent rotation of at least a portion of the communication tool relative to the tubing retrievable safety valve; and

    creating a fluid passageway between the non annular hydraulic chamber and the interior of the tubing retrievable safety valve with the cutting device.

63. The method of claim 62 wherein axially aligning the cutting device includes shifting a first section of the communication tool relative to a second section of the communication tool.

64. The method of claim 63 wherein shifting the first section of the communication tool relative to the second section of the communication tool includes shearing a shear pin coupling the first and second sections of the communication tool to one another.

65. The method of claim 62 wherein actuating the anti-rotation mechanism includes shearing a shear pin coupling a portion of the cutting device to a portion of the communication tool.

66. The method of claim 65 wherein actuating the anti-rotation mechanism further includes aligning a protruding portion of the communication tool with a recessed portion of the tubing retrievable safety valve.

67. The method of claim 66 wherein actuating the anti-rotation mechanism further includes shifting the protruding portion of the communication tool radially outward to engage the recessed portion of the tubing retrievable safety valve.

68. The method of claim 62 wherein actuating the anti-rotation mechanism includes circumferentially aligning the cutting device with the non annular hydraulic chamber.

69. The method of claim 62 wherein creating the fluid passageway between the interior of the tubing retrievable safety valve and the non annular chamber includes mechanically cutting the sidewall portion of the tubing retrievable safety valve.



70. A method for communicating hydraulic fluid through a tubing retrievable safety valve having a hydraulic chamber, comprising:

locating a communication tool having a cutting device within the tubing retrievable safety valve;

axially aligning a portion of the communication tool including the cutting device with the hydraulic chamber;

actuating an anti-rotation mechanism to prevent rotation of at least a portion of the communication tool relative to the tubing retrievable safety valve; and

creating a fluid passageway between the hydraulic chamber and the interior of the tubing retrievable safety valve with the cutting device.

71. The method of claim 70 wherein axially aligning the cutting device includes shifting a first section of the communication tool relative to a second section of the communication tool.

72. The method of claim 71 wherein shifting the first section of the communication tool relative to the second section of the communication tool includes shearing a shear pin coupling the first and second sections of the communication tool to one another.

73. The method of claim 70 wherein actuating the anti-rotation mechanism includes shearing a shear pin coupling a portion of the cutting device to a portion of the communication tool.

74. The method of claim 73 wherein actuating the anti-rotation mechanism further includes aligning a protruding portion of the communication tool with a recessed portion of the tubing retrievable safety valve.

75. The method of claim 74 wherein actuating the anti-rotation mechanism further includes shifting the protruding portion of the communication tool radially outward to engage the recessed portion of the tubing retrievable safety valve.

76. The method of claim 70 wherein the hydraulic chamber is a non annular chamber and wherein actuating the anti-rotation mechanism includes circumferentially aligning the cutting device with the non annular hydraulic chamber.

77. The method of claim 70 wherein creating the fluid passageway between the interior of the tubing retrievable safety valve and the hydraulic chamber includes mechanically cutting a sidewall portion of the tubing retrievable safety valve.